Application No: 10/775,214
Attorney's Docket No: ALC 3118

SPECIFICATION AMENDMENTS

Please replace paragraph [0016] with the following amended paragraph:

[0016] A short review of ~~operation~~ the operation of a VPN is provided, defining the terms used in the description of the present invention. VPNs ensure segregation of user domain IP address space using route distinguishers (RD), and ~~constrains~~ constrain distribution of routing information at a provider edge (PE) router using forwarding tables VRF. User domain segregation is performed at the ingress PE router, while filtering of the routing information is performed by the egress PE router.

Please replace paragraph [0033] with the following amended paragraph:

[0033] Routes received at a PE from peers are VPN-IP routes (e.g. VPN-IPv4), each route being accompanied by the export route target configured on the originating VRF. They are first placed into the master routing information base (RIB) 10, as shown in FIG. 2, for PE1 only, after passing an initial input policy check. Then, the process (BGP) determines which VRFs the routes need to be placed into (route filtering). ~~ImpRT~~ ImpRTs configured on a VRF are used by BGP to filter ~~these~~ VPN-IP routes that are ~~learnt~~ learned from other PE routers. If a VRF has an ImpRT configured, then only the VPN-IP routes that contain this extended community as a path attribute are learned by this VRF (or in other words, the destination becomes reachable by this VRF). Routes that do not have matching extended community route targets are not learned by the VRF and are discarded. Each VRF is now associated with a sub-RIB that holds the routing information for that VRF. FIG. 2 illustrates only the sub-RIBs for PE1, which are sub-RIB 21 associated to VRF A 20 and sub-RIB 16 associated to VRF B 15.

CLAIM AMENDMENTS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of managing virtual routing forwarding (VRF) tables at a provider edge PE router of a L3 virtual private network (VPN), said PE router maintaining a VPN-IP master routing information base (RIB) and a sub-RIB for each said VRF table, comprising the steps of:

~~generating~~ maintaining an import route target (ImpRT) tree comprising all ImpRT attributes currently configured on said PE router;

modifying an ImpRTi attribute of a VRFi table;

searching said ImpRT tree for a match to said ImpRTi attribute to identify a VRFm table having said ImpRTi attribute; ~~and~~

performing a route refresh operation only if a match is not found; and

updating said VRFi table accordingly.

2. (Currently Amended) The method of claim 1, wherein said ImpRT tree maintains a list of all ImpRT attributes at ~~said PE node~~ a PE node, each ImpRT attribute being associated with all VRF tables that are currently configured with said ImpRT attribute.

3. (Original) The method of claim 1, wherein said step of modifying comprises adding said ImpRTi attribute to said VRFi table.

4. (Original) The method of claim 3, wherein said step of updating comprises copying all routes Rm from said VRFm table into said VRFi table, whenever said VRFm table is found in said ImpRT tree.

5. (Original) The method of claim 4, further comprising updating said ImpRT tree to include an association between said ImpRTi attribute and said VRFi table.

6. (Currently Amended) The method of claim 3, wherein said step of updating comprises performing a route refresh whenever said VRFm table is not found in said ImpRT tree. ~~a match is not found~~

7. (Currently Amended) The method of claim 4, further comprising:

searching for said ~~route~~ routes Rm in a sub-RIBm associated with said VRFm table; and

copying said routes Rm from said sub-RIBm into said VRFi table based on all route target attributes configured for said VRFi table, including said added ImpRTi attribute.

8. (Currently Amended) The method of claim 7, further comprising adding said ~~route~~ routes Rm to each VRF table in ~~the~~ a routing database available at said PE router.

9. (Original) The method of claim 2, wherein said step of searching is performed through said master RIB.

10. (Currently Amended) The method of ~~claim 10~~ claim 9, wherein said master RIB includes all routes in all VRF tables at said PE router and further includes all routes that were filtered out at said PE router using ImpRT attributes.

11. (Original) The method of claim 1, wherein said step of modifying comprises removing said import route target ImpRTi from said VRFi table.

12. (Currently Amended) The method of claim 11, wherein said step of updating comprises

parsing all routes in said VRFi table and

removing all routes from said VRF table that no longer match ~~the~~ remaining import route targets of said VRFi table.

13. (Currently Amended) The method of claim 12, further comprising deleting ~~said routes Rd~~ all routes that no longer match from the sub-RIB of said ~~VRFd~~ VRF table.

14. (Currently Amended) The method of claim 13, further comprising ~~propagating~~ deleting in said master RIB every route Rd that no longer matches any ImpRT attribute in said ImpRT tree.

15. (Currently Amended) The method of claim 1, further comprises maintaining at said PE router a rejected routes tree comprised of routes that were not accepted during ~~the~~ ImpRT filtering, wherein said step of searching is also performed on said rejected routes tree.

16. (Currently Amended) At a provider edge PE router, a tree data structure, stored on a computer-readable medium, comprising, for each import route target ImpRT attribute configured on said PE router, a pointer to a virtual routing forwarding VRF table having said respective ImpRT attribute;

wherein a route refresh operation is performed only if a match between a modified ImpRT attribute and an attributed stored in said VRF table is not found.

17. (Currently Amended) The tree data structure claimed in ~~claim 15~~ claim 16, further providing the association between each said VRF table and a respective sub-RIB.

18. (Currently Amended) A tree data structure stored on a computer-readable medium for enabling modification of virtual routing forwarding (VRF) tables at a PE router, comprising, for each import route target ImpRT attribute configured on said PE router, a pointer to a VRF table with said respective ImpRT attribute;

wherein a route refresh operation is performed only if a match between a modified ImpRT attribute and an attributed stored in said VRF table is not found.